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ABSTRACT

This report presents promising curricular practices for use with special populations of gifted students, such as students who are economically disadvantaged, have handicapping conditions, live in rural areas, or belong to a minority group. The report first presents a transition curriculum which enriches and extends the regular curriculum for fourth grade children and is designed to increase teachers' awareness of nontraditional gifted students' potential. Sample transition curriculum units are provided on the topics of Indians in Indiana, Earth Day, and the pioneers of Indiana. In the next section, the video portfolio is presented as a way of recording such events as student interviews and student documentaries of home and family. This section discusses camcorder techniques, interview techniques, and documentary directions. The next section describes a learning activity called the Artifact Box Exchange Network, which is a project that involves students in collecting, tagging, and referencing a set of artifacts that are representative of their locale; exchanging artifacts with students in a distant, unknown locale; and studying the contents to identify the locale. The report briefly describes use of computer bulletin boards and an interdisciplinary unit of study on water. Copies of overheads and handouts conclude the report. (JDD)

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PROJECT SPRING
Indiana Site

Educational Modifications

SPECIAL POPULATIONS
RESOURCE INFORMATION NETWORK
for the
GIFTED

Howard H. Spicker, Project Director
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1993

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TABLE OF CONTENTS

	Page
Preface	i
Acknowledgements	ii
Transition Curriculum : Enrichment Units	1
Transition Curriculum : Sample Units	11
Video Portfolio	28
The Artifact Box	39
Computer Bulletin Board and Electronic Curriculum	44
Interdisciplinary Units	46
Handouts and Overheads	

PREFACE

This report is one of several products developed under the auspices of **Project SPRING (Special Populations Regional Information Network for the Gifted).**

Project SPRING operated within a three-state consortium which comprised Indiana, Illinois and Ohio. **Project SPRING** received funding through The Jacob Javits Gifted and Talented Students Education Act, United States Department of Education.

Developed for the express purposes of identifying and serving the needs of gifted and talented special populations, **Project SPRING** has worked with gifted and talented kindergarten through 3rd grade children who are economically disadvantaged or who have handicapping conditions at the Illinois site; rural gifted students from economically disadvantaged backgrounds in grades 4-6, in southern Indiana; and African American, Hispanic, Mexican American and economically disadvantaged students in urban junior and senior high school settings in Ohio.

The project accomplished the following goals:

1. Demonstrated instruments and procedures for identifying special populations of gifted students.

2. Demonstrated promising curricular practices for use with special populations of gifted students

3. Developed preservice and inservice training procedures for use by educational personnel to properly identify special populations of gifted students.

4. Developed preservice and inservice training materials and procedures to allow more effective educational programming for gifted students from special population.

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Heartfelt appreciation goes to the project's two highly skilled and dedicated project coordinators - Nancy Poling who filled the coordinator's position the first two years, and Shirley Aamidor who served as principle research assistant for two years and then moved into the coordinator's role the final year. They efficiently organized and monitored the day to day operations of the project. Nancy was instrumental in assisting in the development of the identification manual and Shirley in the development of the curriculum manual.

A special acknowledgment is merited by the three Gifted and Talented Coordinators of SPRING's demonstration school district sites: Mary Lou Nay (Brown County), Martha Nice (Paoli), and Diane Wilson (Crawford County). They enthusiastically supported the project and were instrumental in experimenting with nontraditional procedures for identifying rural disadvantaged gifted children, developing innovative curriculum materials and practices, and directing the implementation of those innovations.

Appreciation is expressed to SPRING's talented consultants. They include: Sam Guskin - External Project Evaluator, Duane Busick - Video Technology, Gary Moss - Computer Technology, Janice Bizzari - Curriculum, Suzanne Herrick Walker - Statistical Analysis.

The more than one hundred children who were identified through Project SPRING are deserving of special recognition. Because of their participation, it is expected that the identification of, and programming for the gifted and talented rural child will become policy in many school districts. Additional thanks are expressed to the many hundreds of other children who willingly cooperated with the project staff for testing purposes.

This project could not have been conducted without the generous assistance of our three participating school districts: Brown County Community School Corporation, Crawford County Community School Corporation, and Paoli Community School Corporation. Individual schools and their building administrators which provided invaluable assistance were: Helmsburg Elementary; Nashville Elementary; Sprunica Elementary; and Van Buren Elementary; of Brown County: English Elementary; Leavenworth Elementary; Marengo Elementary; Milltown Elementary; Patoka Elementary; and finally Throop Elementary School of Paoli. Numerous 4th, 5th and 6th grade teachers arranged schedules and integrated into their classes the curriculum interventions that were necessary to accomplish our goals.

Finally, a special thanks to Debby Davis, SPRING's administrative secretary. She efficiently maintained our financial records and with great professional skill designed the written documents of Project SPRING Indiana.

Howard H. Spicker
Project Director

TRANSITION CURRICULUM ENRICHMENT ACTIVITIES

SPRING Transition Curriculum: Enrichment Activities

INTRODUCTION

After 4th grade children were identified for participation in Project SPRING, possible curriculum intervention methods/ strategies were discussed by SPRING staff, the gifted and talented coordinators, and classroom teachers. To accomplish an appropriate level of intervention, and maintain structure and organization within the regular state-mandated curriculum, it was decided to implement a **Transition Curriculum**. While SPRING students were specifically targeted for this curriculum, all 4th grade children received the benefit of the **Transition Curriculum**.
Curriculum modification of fourth grade classroom units were used to provide a transition curriculum for SPRING students. This transition time allowed for acceptance of the nontraditional gifted by teachers and others as having potential. In Grade 5 SPRING students were included with the regular gifted operation, doing things that "cut across" in pull out operations.

This **Transition Curriculum** used models/concepts and methodologies which are frequently applied in gifted education and involved enriching and extending the regular curriculum (See **Transition Curriculum** for examples).

The following paradigms have been incorporated in both the conceptualization and organization of the curriculum and instruction for Project SPRING. They include:

Bloom's Taxonomy
Taba's Inquiry Model
Renzulli's Enrichment Triad Model
Gardner's Theory of Multiple Intelligences
Bizzari's Curriculum Model.

Specific Strategies

For cognitive development to be systematic a child must have experiences which help him organize thinking skills. Systematic strategies which help meet this need have been identified by Dr. Hilda Taba and others.

Concept Development

Four steps assist the teacher in helping children with concept development.

Step 1: The teacher asks a question or makes a statement causing pupils to contribute items for a list.
Examples: "What did you see, notice or hear?"
"Tell us something about _____."

Step 2: The teachers asks a question or makes a statement causing pupils to group data listed.
Examples: "What things seem to go together?"
"Let's group some of the things that seem to go together."

2A: The teacher asks questions to find out reasons used by students for group data.
Examples: "Why did you put bears with wildcats?"
"What reason can you give for grouping as you did?"

2B: The teacher asks a question or makes a statement causing pupils to use many ways to group data listed.
Examples: "Can you see other ways of grouping?"
"Let's see if we can put these items in more than one group?"

Step 3: The teacher asks a question or makes a statement causing pupils to label or categorize grouped data.

Examples: "What name can you give for each group?"
"What one word can be used to stand for this group?"

Step 4: The teacher asks a question or makes a statement causing pupils to add data under categories.
Examples: "What other things could go under the word _____?"
"Let's make each group larger by adding other things that belong to it."

Interpreting Data

Interpreting data is a higher level thinking skill and can be developed through a series of questioning strategies. The first question should bring out the "what's" to be considered, or focus on a particular set of facts - "What did you see? ...read? ...hear?" "What differences do you see?"

The second planned question should change the focus to seeking relationships through asking for causality, explanation and simple conclusion. Such a question might:

a. head toward the purpose of the discussion ("Why do you think the big boys hurt the younger one's?").

b. zoom in on selected facts from the total list ("Which of these items show the type of community we have? Why?").

c. pick up an item from the list which the teacher thinks will be productive in terms of inferring or generalizing information from the data ("Why do you think there are difference in their standards of living?").

d. seek over-all interpretation ("Why do you think these things happened?"
"How do you account for these differences?").

e. by a "why" type question or a question where each response is followed immediately by "Why do you think...?"

At this point many inferences and generalizations may be offered if the teacher pursues thinking with each child who responds.

Application of Generalizations

Application of generalizations calls for transfer of knowledge, a high level skill. It, too, is developed through a series of planned questions.

The **first** question sets the focus, the condition for predicting what might happen given a new set of data, and comes after pupils have explored a subject.

"What would happen if the Pilgrims had not come to America?" (Builds on previous knowledge of the condition of America before the Pilgrims.)
"What if water came to the desert?" (Necessitates previous experience with the concept of 'desert'.)

A **second** type of questions calls for application, asking the child to support his/her prediction.

"You said the lizards would go away. What makes you think so?"
"Why do you think we would all live in tipis?"

The **third** type of questions seeks reasoning in cause and effect, immediately compared with long range consequences.

"If the lizards went away, what difference would it make to the other animals?"
"If all Americans were Indians what difference would it make in the way we live?"

The **last** step is to try and check out or verify some of the predictions.

"Which of these could really happen?"
"Can you think of some things that would keep these from happening?"

Of course, these are difficult thinking skills and are not routinely expected of very young children. They are included for reference in the over-all scheme of critical thinking development, and are appropriate for second and third graders and others who have the prerequisite concepts.

Resolution of Conflict (also called interpretation of feelings, attitudes and values)

The following is a questions sequence for interpreting feelings, perhaps using a story or study print:

1. What happened here?
2. Why do you think it happened this way?
3. How do you think the little girl felt?
4. Has anything like this ever happened to someone you know? Has it ever happened to you?
5. How could this situation have been different?
6. Why do you think people sometimes do things like this?
7. From looking at this situation and talking about it, what kinds of things could you say about people?

Evaluation

In evaluating lessons in which you've used the strategies discussed, the amount and kind of interaction between children will be an important thing to note. Was there more participation in today's lesson? If so, why? Or was there less, and if so why? Did he subject seem appropriate and stimulating? Were you able to minimize your comments, yet guide the group at appropriate points? Were pupils building on each other's contributions? Was there logical agreement/disagreement or did pupils take sides along friendship lines? Were you successful in moving from less abstract ideas to higher thinking levels?

In considering these things just be sure you keep in mind not only the objective(s) of the lesson, but also the progress of each individual child in the group.

Activity: Working in groups of 4 or 5, agree on a concept or idea and apply Taba's Teaching Strategies Program. Be prepared to implement this method before the rest of the groups.

TRANSITION CURRICULUM/ENRICHMENT

Social Studies **Before** and **After** Curriculum *

Examples of Before curriculum modification and After curriculum modification units are included. The Before unit focused on reading and recitation of the content, and simply followed the text. The After unit used gifted curriculum models, introduced concepts and ideas, and developed a series of projects that accomplished the objectives. For example, all fourth graders in Indiana must study Indiana History. One of the topics of that study is Indiana Government. Let us examine the Before and After aspects of that study.

INDIANA GOVERNMENT BEFORE MODIFICATION

Study Sheet - Know these Words (Knowledge)

constitution - a set of laws that say how our country is governed

capital - the government of the state is in this city

capitol - a building where state representatives meet

census - a population count

federation - a nation made up of separate states

polls - the place where you vote in an election

democracy - a form of government where people govern or rule themselves

elected - chosen by vote

UNIGOV - United Government of City and County

campaign - to ask others to vote for you

term - the length of time a person is elected to an office

*This unit was developed by Mary Lou Nay, Gifted and Talented Coordinator, Brown County School Corporation, with the assistance of 4th grade teachers

Know These Facts (Knowledge)

1. Our state capital is in Indianapolis.
2. A constitution governs our state.
3. The Department of Defense makes sure our country is safe.
4. The Governor is the head of the Executive Branch of the State Government.
5. The President is the head of the Executive Branch of the Federal Government.
6. The Congress determines how our tax money is used.
7. The number of representative in Congress is determined by the size of the state's population.
8. A census is taken once every ten years.
9. The Judicial Branch is not elected by the people.
10. Indiana has ten representatives to Congress.
11. Indiana has two senators in Washington.
12. Indiana has 100 state representatives in the state legislature in Indianapolis.
13. Indiana has 50 state senators in the state legislature in Indianapolis.
14. A senator in Washington is chosen for six years.

Name Our 2 U.S. Senators

1. Dan Coates
2. Dick (Richard) Lugar

Indiana's CONSTITUTION

1. First written in 1816
2. Re-written in 1851
(we still use it today!)

State Government takes care of:

1. Schools
2. State Police
3. State Parks
4. State Forests
5. State Highways

Name 3 Branches of Government in both our Country and State

1. Executive
2. Legislative
3. Judicial

Three Branches of Government in State Offices

1. Executive - Governor
2. Legislative - State Senators
   - State Representatives
3. Judicial - State Judges

Three Branches of Government in Federal Branches

1. Executive - President
2. Legislative - U.S. Senators
   - U.S. State Representatives
3. Judicial - Supreme Court Justices

INDIANA GOVERNMENT AFTER MODIFICATION

A. THEME: Citizenship and American Values

B. STUDENT TARGET: 4th grade

C. CONCEPTS:

1. Knowledgeable voters (informed)
2. Form opinions and make decisions
3. Evaluate the politics of government
4. Become responsible and involved citizens
5. Appreciate freedom and democratic process
6. Be aware that various forms of government affect people differently

D. CONTENT:

1. Purpose of elected or appointed officials
2. Branches of government
3. How a bill becomes law
4. Role of local government
5. Levels of government
6. Party politics
7. Hoosiers in national politics
8. Voter rights and responsibilities

E. PROCESS:

RENZULLI

1. **STAGE 1** -- AHA - You may choose from the list of activities in the student section. These may be used as seen appropriate

   a. Field trips
   b. Guest speakers
   c. Video
   d. Music
   e. Readings
   f. Personal accounts

2. **STAGE 2** -- PROCESS SKILLS

   a. Interviewing

b. Notetaking
c. Video taping
d. Problem solving
e. Brainstorming
f. Creative problem solving
g. Sequencing
h. Evaluating

3. **STAGE 3** -- PRODUCT -- STUDENT AS INDEPENDENT RESEARCHER/INVESTIGATOR

a. Sharing information with relevant audience
b. Setting opportunities to practice

F. <u>POSSIBLE PROJECTS FOR GROUPS OR INDIVIDUALS</u>

1. Have the class elect a government (using strict guidelines for the campaigning procedure) and name the governing body.

2. Have the governing body create the class Constitution.

3. Have volunteers (or designated students) design a class seal. Use secret ballots to choose one.

4. Draw caricatures of government in action

5. Trace the creation and "Life" of a bill as it passes through the class government.

6. Have students research and perform a mock trial (with judge, jury, prosecution, defense, etc.).

7. Use classroom elections to decide upon 1 representative for each 4th grade class to act as liaisons.

8. Decide on terms for the representatives (i.e., 1-3 months), and provide for re-elections.

9. Create a time line of voting rights (men, women, blacks immigrants).

10. Discover what immigrants need to do to become voting citizens of the USA

TRANSITION CURRICULUM
SAMPLE UNITS

Sample Content Unit* #1

Indians in Indiana

Grade 4

Introduction

This unit has been developed as a learning center to supplement the Indiana History curriculum. It will serve students in the fourth grade who study the history of Indiana that pertains to the Indian time period.

The unit is based on Indians that lived in Indiana before the time of the white man to the time that Indians were pushed out of Indiana to become a state. This learning center has been organized to meet the characteristics of the gifted and talented children by offering Bloom's higher level thinking processes. It also contains a multidisciplinary approach towards history.

Unit Goals:

The student will appreciate the Indian's contribution to the American way of life.

The students will know customs of the different groups of Indians that lived in Indiana.

The students will become aware of the many groups of Indians that lived in Indiana during a time period that covered many thousands of years.

The students will understand why the Indians felt threatened by the American settlers.

The students will understand the sacrifices the Indians made to keep peace and to survive.

* These sample units were developed by Mary Lou Nay, Gifted and Talented Coordinator, Brown County School Corporation, with the assistance of 4th grade teachers

Content:

I. First Indians before the arrival of the white man
II. Prehistoric Culture
III. Historic Indians of the surrounding Indiana territory
IV. Historic Indian culture and customs
V. European colonization and its effects on Indian life
VI. Indian Leaders
VII. Treaty processes and removal of the Indians from Indiana
VIII. Indian Heritage

I. First Indians before the arrival of the white man.

Activities:

1. Make a written list of the names of five prehistoric Indian tribes. (Knowledge)

2. Explain how the Indians came to the American continent. (Comprehension)

3. Make a map showing the route the Indians took to get to the American continent. (Application)

4. Compare and contrast the likenesses and differences of the five prehistoric tribes. (Analysis)

5. Suppose that you have a time machine that allows you to move backward or forward in time. Set the machine for 8,000 B.C. and generate an idea on what you would see in the area north of the Ohio River. (Synthesis)

6. How do we know so much about the prehistoric people since there are no written records left? (Evaluation)

II. Prehistoric Culture

A. Food

Activities:

1. Name the different foods each tribe ate.(Knowledge)

2. Describe the reason(s) the Shell Mound Indians were appropriately named. (Comprehension)

3. Construct a mound similar to the mounds of the prehistoric Indians. (Application)

4. Compare and contrast the foods that each prehistoric tribe ate. (Analysis)

5. Prepare a daily menu based on what one Indian tribe would eat. (Synthesis)

6. Compare their resources for food with ours. (Evaluation)

B. Tools - Crafts

Activities:

1. Tell what three main tools were used by the Prehistoric Indians. (Knowledge)

2. Explain why the hammerstone was considered the most important tool. (Comprehension)

3. Make an ornamental pin from natural resources. (Application)

4. Make a corn husk doll. (Application)

III. Historic Indians of the Surrounding Area

Activities:

1. List the six historic tribes. (Knowledge)

2. Explain why these tribes are called historic. (Comprehension)

3. Construct a prehistoric time line ending with Robert LaSalle. (Application)

4. Determine how Indians came up with names for people, places and things. (Analysis)

5. Write an original story about an Indian child of the midwest. Try to keep details accurate. (Synthesis)

6. Research a famous Indian of the Northeast. Write a paragraph explaining what you admire most about him or her. (Evaluation)

IV. Historic Indian Culture and Customs

A. Homes, food and clothing

Activities:

1. Name the types of shelters Indians would build. (Knowledge)

2. Explain what materials were needed and how they built one of the shelters mentioned above. (Comprehension)

3. Illustrate/Make a traditional ceremonial costume worn by the Woodland Indians. (Application)

4. Construct a model shelter. (Application)

5. Compare and contrast how the Algonquins and the Iroquois. Be sure to include clothing, homes and tools. Show how these items fit their lifestyles. (Analysis)

6. Design a home that would be acceptable in any season of Indiana. (Synthesis)

7. Appraise the importance of nature to the Indians. (Evaluation)

B. Division of Labor

Activities:

1. Write in two columns the expected work of women and of men. (Knowledge)

2. Analyze the role of women among the Iroquois tribe. (Analysis)

3. Compare and contrast the work Indian women did then, to the types of work women do today. (Analysis)

4. Write a poem about a tribe and the work they were expected to do. (Synthesis)

C. Social Life

Activities:

1. Memorize a game and a dance of the Indian culture and teach it to the rest of the class. (Knowledge/Application)

2. Make a diorama of Woodland Indians enjoying a sport or game, and explain it to the rest of the group. (Comprehension)

3. Make a corn husk ceremonial mask. Prepare the husks by drying them in the sun for several days or between sheets of paper for several weeks. Make the masks as authentic as you can. (Application)

4. Compare and contrast the Iroquois celebration of the New Year with our celebration of Halloween. (Analysis)

5. Develop an authentic outdoor game that Indian children might enjoy playing. (Synthesis)

6. Judge your game by the following criteria:

   - are there directions?
   - rules
   - number of players that can play
   - age limit
   - object or purpose of the game
   - appropriate for the environment in which the Indians lived. (Evaluation)

D. Transportation and Communication

Activities:

1. Tell as many modes of transportation as you can. (Knowledge)

2. Write three main ways the Indians communicated with other Indian tribes and with the European settler. (Knowledge)

3. Translate a paragraph that contains a few Indian words into English. (Comprehension)

4. Make your own pictograph showing an important event in your childhood. (Application)

E. Economics

Activities:

1. Name two ways the Indians "bought" items from settlers and each other. (Knowledge)

2. Explain the use of wampum and draw a picture to illustrate your explanation. (Comprehension)

3. Construct different wampum belts to symbolize wealth and power. (Application)

V. European Colonization and the Effect on Indian Life

Activities:

1. List the ways in which the American settlers posed a threat to the Indians.

2. Explain why the Indians generally got along better with the French than the English. (Comprehension)

3. Survey people to find out who they believe should have had this land. (Application)

4. Analyze the reasons the English and French had in "claiming" the new world. (Analysis)

5. Suppose the Indians had kept the land. What would it be like today? (Synthesis)

6. Recommend a way that everyone could have fairly and equally claimed the land. (Evaluation)

VI. Indian Leaders

Activities:

1. Name three Indian chiefs. (Knowledge)

2. Describe why these chiefs were considered leaders. (Comprehension)

3. Collect information on one great Indian man or woman, and make a timeline of his/her life. (Application)

4. Outline some of the deeds or behaviors an Indian leader did for his/her people. (Analysis)

5. Pretend you have gone back in time to 1620 A.D. Interview Massasoit. Write the results of that interview. (Synthesis)

6. Write a written report supporting why you think a particular Indian was a good leader. (Evaluation)

VII. Treaty Processes and Removal of Indians from Indiana

Activities:

1. Tell who the "Treaty of Greenville" was between.(Knowledge)

2. Select a treaty and explain the agreement made between the two parties. (Comprehension)

3. Show how the Treaty of Paris greatly increased the size of America and the relationship between what was to become the Northwest Territory and the rest of the United States. (Application)

4. Analyze the importance of treaties. (Analysis)

5. Propose other ways to settle issues without the use of violence or treaties. (Synthesis)

6. Critique the effectiveness of the treaties made between William Henry Harrison and the Indians. (Evaluation)

VIII. Indian Heritage

Activities

1. Identify some things we have today that originated with the Indians. (Knowledge)

2. Locate states/town/rivers/lakes in the Midwest region that have names of Indian origin and what they mean. (Comprehension)

3. Exhibit five items you own that originated from the Indian culture. (Application)

4. Compare and contrast how these items are used today in comparison to how the Indians used them. (Analysis)

Sample Content Unit #2

Earth Day

Grade 4

Theme: Four Rs

Objectives:

1. To inform students of the nature of problems currently facing our global environment.

2. To motivate students to realize their potential for solving many of these problems.

3. To introduce students to the concepts of recycling, reusing, restoring, and rethinking consumer goods to relieve the burden of landfills and conserve our natural resources.

4. To encourage students to inform their school and community of the many ways individuals and groups can make a positive and lasting change in the environment.

I. Introduction

A. Begin with discussion of earth facts. Aim to impress, shock and call audience to action. (See Earth Day file)
   1. Wonders
   2. Problems
   3. Role of humans
   4. Future of earth

B. Introduce the 4 Rs
   1. Recycle
   2. Reuse
   3. Restore
   4. Rethink

C. What we can do
   1. Start small
   2. Take action

D. Show video: I Need the Earth and the Earth Needs Me

II. Development

A. Rethink

1. Our bad habit (i.e. driving everywhere, trash, packaging)
2. Our expensive habits (i.e. fur, ivory, jewelry)
3. Our role (We can make a difference. We can let our voices be heard. We can take action)

Activities: "What I Can Do" projects

- Write letters and send back plastic, paper, foam packaging to toy, camera, record companies. (p. 17-18 in Save our Planet)
- Write to support positive political and corporate decisions such as ivory and whaling bans and recycling efforts.
- Write to encourage positive change and decisions regarding the earth.
- Watch the movie, The Lorax. (Available through Shared Information Services)
- Keep a family journal of activities done, changes made, frustrations, discussions, etc.
- Brainstorm a list of things that we can do at school that will benefit our earth.
- Design a plan to reduce the use of paper in the classroom.
- Invent an alternative to dangerous six-pack rings.

B. Recycle

1. Research local places and products to recycle.
2. Facts about recycling and garbage accumulation presented.
3. After "Trash Week" (see activities below, discuss "Where does our trash go?"

Activities:

- Trash Week. Each child receives a trash bag to collect week's trash. Child should carry bag with them wherever they go for one week (M-F) and bag all garbage that won't smell bad. On Friday, class will weigh and graph results.
- Use data from Trash Week to calculate population figures (i.e. Paoli, Indiana, USA, etc)
- Write a newspaper/school newsletter article reporting results.
- Garbage Artwork (p.21 in Save the Planet)
- Develop a plan for a recycling center in the school cafeteria.

C. Reuse

1. Brainstorm reusable items (i.e. napkins, diapers, handkerchiefs, lunchboxes, dishrags, etc.).
2. Collect facts from a recycling company.

Activities:

- Create a compost pile
- List and categorize a daily "user" list. List all consumer products used that day. Categorize as reusable, recyclable, or garbage.

D. Restore

1. Discussion of companies and organizations that replant resources used.
2. Guest speaker: Landscape designer.

Activities:

- Plant trees on Arbor Day.

- "Activi-tree" game (Project Learning Tree flyer).
- Create a garden on school property.

III. Culmination

A. Earth Day celebration

1. Natural foods party (i.e. oatmeal cookies, sassafras tea).
2. Volunteer to do an area clean up.
3. Visit a zoo or nature preserve.

Resources

Save Our Planet: 52 Easy Things Kids can do Now
by Susan Levine
Project Learning Tree Activity Guide K-6
Arbor Day Foundation
Ranger Rick's Naturescape: Our Rainforests
Zoobooks
National Wildlife fund
Greenpeace
Sierra Club
Whale Adoption Project
Personal Tree file
Personal Earth Day file
Video: I Need the Earth and the Earth Needs Me
50 Simple Things Kids Can Do To Save the Earth
by The Earthworks Group

Sample Content Unit #3

The Pioneers of Indiana

Subject Area: Indiana History/Social Studies

Grade: Fourth

Theme: The way of life for pioneers in Indiana was full of hardships, yet the pioneers helped each other through these times with hard work and support.

Concepts:

1. The settlers came to Indiana by crossing mountains, traveling rivers, trails, and/or roads.

2 The Indiana pioneers spent most of their time providing food, shelter and clothing.

3. The Indiana pioneers faced many obstacles such as clearing the land, building homes, and fighting Indians, weather, and disease.

4. As the number of Indiana pioneers increased, small villages and towns developed.

5. Indiana pioneers lived both in isolation and cooperation.

6. Indiana pioneers exchanged work for needed goods.

7. The Indiana pioneers had a different way of life, according to the location of their settlement.

Skills:

1. The students will be able to identify the means pioneers used to come to Indiana.

2. The students will be able to locate rivers and roads used by Indiana pioneers.

3. The students will be able to describe a typical Indiana pioneer's day.

4. The students will be able to describe the types of food, shelter, and clothing used by Indiana pioneers.

5. The students will be able to describe ways the Indiana pioneers cleared land, built homes, fought the Indians, weather, and disease.

6. The students will be able to identify the ways towns and villages developed.

7. The students will be able to compare and contrast ways Indiana pioneers worked in isolation and in cooperation with other pioneers.

8. The students will be able to identify the money system used by Indiana pioneers.

9. The students will be able to classify occupations and duties as belonging to Indiana pioneer women, men, boys, or girls.

10. The students will be able to compare reasons for human migration today with reasons for the westward movement to Indiana.

Attitudes:

1. The students will become informed about their Indiana Heritage.

2. The students will gain respect for the natural environment.

3. The students will appreciate the lifestyle they have become accustomed to living.

Activities:

1. Elicit a discussion with the class about the ways they think pioneers arrived in Indiana. Map the routes that pioneers traveled to Indiana and early transportation methods of Indiana.

2. Fieldtrip. The students will experience pioneer life through Conner Prairie. The students will see the wool being dyed and spun. The students can explore a cabin and a village.

3. Journal Writing: After the fieldtrip, the students write about their day as a pioneer.

4. Film: Frontier Boy of the Midwest
Discussion: Ask

   a. Discuss the steps to settling as a pioneer.
   b. What was a typical meal for the pioneers?
   c. Where did this food come from?
   d. What type of clothing did they wear?
   e. Discuss the typical day of a pioneer man, woman, boy and girl.

5. Project: Students will create a quilt square.

6. Students will take notes about accidents, diseases, transportation, and foods of the pioneers. In small groups ask each group to identify one piece of information about accidents, diseases, transportation, and food.Students will give reasons why these things were obstacles to the pioneers.

7. Your family is living in an area where an epidemic strikes. The family wants to move, but your mother has caught the epidemic. Your family must stay. How will you protect the rest of the family from the epidemic? What do you do with your mother?

8. Students will ask grandparents about "granny cures" or home remedies used in their childhood days. Research folk cures for common illnesses.

9. Read: A City is Born Discussion: The students will discuss the fact that Indianapolis was a planned city. Most cities just grew in pioneer times. Why was Indianapolis handled differently?

   Ask: 1. What were the advantages and disadvantaged of a planned city?
   2. Imagine you are the planner of the city. What will you plan? Why?
   3. What problem(s) did they encounter in planning and building the city?
   5. Discuss the reasons for new trades in Indianapolis

10. Film: Pioneer Living: The Village
Discuss the pioneer village at Conner Prairie

Develop a map of a pioneer village. Discuss the location of towns. Give reasons for the towns being near rivers and streams.

11. Film: Pioneer Living: The Home, Pioneer Living: The Farm, and Pioneer Living: Education and Recreation. Small Group: The students will be divided into small groups. The students will be assigned women, men, boys, or girls, then they will make a chart of a typical day for their person/family. They will present their findings in class. The chart will be displayed in the classroom.

12. Activity: The students will write with a quill pen. The students will begin to make cornhusk dolls, school slates, homemade quilts and practice pioneer dances.

13. Discussion: The students will describe the activities carried out at a quilting bee, spelling bee, cornhusking bee, box social, logrolling contest, or wrestling contest.

14. Journal Writing: The students will write about their experiences from their point of view of pioneer man, woman or child.

15. Role Playing: One student will be a worker in a mill for a day. Another student will be a mill owner. At the end of the day the worker refuses pay. The worker accepts goods in exchange for his labor. Two students will be modern day workers. They will figure their pay for an 8 hour day, but they wait for their pay until the end of the week.

Discussion: Students will predict the amount of money a pioneer family might have in their possession. Students will recall the story of William Conner. He had gold which was required to buy land. he purchased the land with gold and resold it for large profits.

16. Students will compare and contrast life on a farm, in a village, fort, city, and on a Lake County farm. Students will have studied each type of settlement. Small Group: The students will work in groups to make a chart stating location, homes, land, work, play, food, water, tools, power, trade, medicine and illnesses for one of the settlers' locations.

17. The students will compare pioneer life to their modern life.
Ask: 1. Where would you have lived, if you were an Indiana pioneer? Why?

2. Would you rather have been a woman, man, boy or girl? Why?
3. Which group of pioneers do you admire most? Why?
4. What would be your favorite thing to do as a pioneer?

Culminating Activity:

Students will write and present a play about Indiana pioneers. The play will portray pioneers from all over Indiana.

Extension Activities:

1. Students and teacher could prepare a pioneer's typical meal.

2. Students and teacher will share Indiana folktales.

3. Locate words in our language today that were derived from the pioneers.

Sources:

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Hawkins, Hubert, H. et al. Heartland America: Living Indiana History. Indianapolis, Indiana: David Stewart Publishing Company, Inc., 1965.

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VIDEO PORTFOLIO

VIDEO PORTFOLIO

The video portfolio is used in the following specific instances, but can also be used any time an event should be recorded, for example, a student giving an oral report, a class play, or discussion.

1. Student Pre/Post Interviews
2. Student Documentary of Home and Family
3. Contest Interviews to evaluate critical thinking
4. Product Evaluation

The video portfolio section is introduced as follows:

1. Camcorder Techniques for Students
   A. Directions on how to use camcorders
   B. Safety and care of camcorders (for taking home)

2. Interview Techniques

3. Documentary Directions

CURRICULUM

CINEMATOGRAPHY TECHNIQUES

Brief Description:

Cinematography Techniques is a short program designed to instruct students in the use of the camcorder, and teach students the skills of using simple cine-matographic styles and shots.

Objectives:

1. To teach simple camcorder technology.

2. To demonstrate the purposes and techniques of using different cinematic shots.

Materials:

Camcorder
Tripod
Blank tape for each child
Handouts: Lights! Camera! Learn!
Cinematography: Type of Shots

Procedure:

Students should have opportunities to experiment with the equipment before a project is begun. Initial experience should include practicing to focus, zoom in and out, load, stop and start the camera, and rolling the tripod around the room. This minimal training will enable them to gain confidence before filming begins. Additionally, students should be familiar with connecting a microphone, and establishing the correct lighting conditions.

If time permits, students in small groups can practice operating the camcorder and shooting various shots by doing a "scavenger hunt". For example, they can be required to find five indoor and five outdoor shots, or, nature shots, people shots, building shots etc. using the cinematographic techniques in their handout.

Evaluation:

Using the criteria listed above, students show their completed tape to the rest of the class for feedback and evaluation.

CURRICULUM

CINEMATOGRAPHY: TYPES OF SHOTS

Back View (BV):	Rear view of subject or action.
Closeup (CU):	Subject or portion of subject fills frame.
Cutaway, Reaction Shot:	Shows reaction of subject immediately before or after scene.
Follow Shot:	Camera remains in one location while following movement of subject. Distance between subject and camera changes.
Front View (FV):	Camera is positioned to face the action or subject.
High Angle (HA):	Camera is positioned above the subject.
Long Shot (LS):	A shot in which the background is dominant and the subject is seen at a distance.
Low Angle (LA):	Camera is positioned below the subject.
Match Cut (MC):	Two or more shots of the same sequence of action, filmed from different angles or positions.
Medium Shot (MS)	Full to three quarter view of subject. Some background is visible.
Pan:	Camera position remains stationary but camera moves from left to right or right to left.
Resolved Pan (RP):	Camera focuses on one subject, pans to a second subject.
Scenic Pan:	A slow pan to establish locale.
Swish Pan:	An old fashioned technique to establish the change of locale. The camera pans in one quick, blurred movement.
Tilt or Vertical Pan:	Focus moves from top to bottom or bottom to top of subject.
Trucking Shot:	Camera moves with subject, maintaining constant distance.

CURRICULUM

INTERVIEW TECHNIQUES

Brief Description:

Interview Techniques is a short program designed with strategies and activities to teach students the process of interviewing.

Objectives:

1. To demonstrate the purposes and techniques of interviewing.

2. To teach questioning strategies.

3. To relate critical thinking techniques to interviewing.

Materials:

Resource person - newspaper or TV reporter
Interviews from TV news programs

Procedure:

1. Students need to understand the difference between interviews and conversations. Definitions:

   Interview - a meeting in which a person is asked about personal views, activities, etc.; a taped or filmed or published account of such a meeting.

   Conversation - the act or an instance of talking together (familiar talk, verbal exchange of ideas, opinions, etc.)

2. Discuss the purpose of interviews when and when they would be used.

3. Background information needed about the subject; research the topic if not enough information is known or is current.

4. Contact the individual who you wish to interview. Phone or write a letter stating the time, place, subject to be covered in the interview.

5. Demonstrate writing questions to use in an interview, with grouping the questions into categories or areas for a logical progression.

Example: Interview the principal on the topic of the school cafeteria.

Possible topic areas from which to develop questions:
Scheduling for class eating times
Movement and rules for the cafeteria
Menus and food procurement
Money and the price of lunches
Government and Health regulations

6. Learn how to summarize and evaluate the interview.

7. Use different types of media for the interviews, i.e., newspapers, video tape.

8. Contact a resource person to come and talk to the class about how s/he conducts interviews (newspaper or TV reporter).

9. Practice Activities:

a.Interview another student in the class. Video tape the actual interview and then analyze the results.

b. Interview your favorite TV personality or character. Write the topics and questions you would ask.

c. Use a current event to stimulate discussion. Select a person to interview about the situation. Write the topics and questions.

d. Discuss a research topic. Plan an interview of a person who could give a lot of information to you about the topic.

e. Plan an interview for someone to interview you. Give the questions to a fellow student and conduct the interview. Did you leave out any areas? Evaluate the results.

f. How and why would you interview your parents? See if you could outline an interview with them.

Evaluation:

1. Paper pencil: Discuss a situation. Have the students write the topics and questions to be used in an interview with a person you suggest.

2. Students will evaluate the interviews conducted by other students in the class.

3. Students will do a self-evaluation of their own interviews.

4. Teacher observation of presentation and questioning techniques.

CURRICULUM DOCUMENTARIES

STUDENT AUTOBIOGRAPHIES ON VIDEOTAPE

Objectives:

1. To observe children's hobbies, interests, and abilities outside of the school setting.

2. To teach children interview skills and organization.

3. To collect data from parents concerning feelings about school, education, and ambitions for their children

Brainstorm with the students what, where and who will be in the documentary. Each student will make an outline which includes the following:

A. OUTLINE

1. What do you want to show in your documentary?

2. Who are you going to tape?

3. Where (settings) will you tape?

4. What sequence or order will you use?

5. Organize your ideas into a story with a beginning, middle and end.

B. STORYBOARD Use Storyboard sheets

1. Using the documentary outline above, begin to visualize how the documentary will be videotaped.

2. Draw stick figures for each setting on the storyboard sheets.

3. Write who is in the scene and what they are talking about. Write a script if necessary.

4. Do each scene (setting) in the same way.

5. How will the documentary end?

C. PRODUCE YOUR VIDEO

CURRICULUM

STORYBOARD

Materials: Storyboard Sheets

In planning the self-documentaries, it might be a good idea to let each student brainstorm with you on how s/he is going to shoot the documentary. This is especially important when productions are to be edited in the camera (as most of these are).

From your brainstorming session should come an outline as to how the student will do her/his production. Thought should be given as to who will be watching this video and how the student can best establish the setting of the self-documentary. This is the first step toward making a visual interpretation of the ideas developed during brainstorming.

Visualizing shots and planning sequences is called storyboarding. A sequence is a series of connected shots at one location. In storyboarding, you map out the important elements, analyze the sequences and what is going to happen, and decide what shots are best to use.

From your storyboard you can go on and create a list of the shots you will need to do your production and also expand your story outline into a shooting script.

A script is really just an extension of the storyboard. There are full scripts and there are partial scripts. It is not realistic for most people in a home video to memorize a full script of dialogue and at the same time appear natural on video. In most cases an outline of the shots and sequences with a description of the story content is sufficient.

CURRICULUM

OVERHEAD\HANDOUT

CHILD INTERVIEW

Description:

1. Please tell about yourself: your name, age, family.

Interests and Activities:

1. What do you like to do outside of school? Tell me more about (collections, games, etc. - whatever the student is interested in).

2. If you have some free time to do anything you would like to do, what would it be? Why?

3. What activities do you like to do with friends?

Self Concept:

1. What are you really good at?

2. Are there any areas in which you don't do very well? What are those?

Aspirations:

1. If you could be anybody in the world, living or dead, who would you be, and why?

2. What would you like to do when you grow up? Why?

3. What do you see yourself doing when you grow up? Why?

4. How will you be able to do this? (How will you achieve this?)

5. Who do you think will help you to achieve your goals?

Attitudes toward school:

1. What do you like about school? What are your favorite subjects, and how well do you do?

2. What don't you like about school? Why?

Closure:

1. What would you like to tell me about yourself that I haven't asked, or that you want me to know?

PARENT INTERVIEW
(conducted by the child)

Objectives:

1. To demonstrate parent attitudes toward education of their child
2. To obtain information about parental aspiration for their child
3. To develop parent involvement in the child's documentary

Procedure:

After instruction in the use of the camcorder and interview techniques, the student takes the camcorder home to film his/her documentary, which includes a parent interview. The student has a copy of the questions.

1. Please tell me about our family.
2. What do you remember about me while I was growing up?
3. Would you tell about what I like to do, and what kind of person I am?
4. Am I like anyone else in the family?
5. What do you want me to be when I grow up?
6. What do you like about schools today?
7. Is there anything you would like to change in the schools?

THE ARTIFACT BOX

The Artifact Box Exchange Network

An Overview of the Artifact Box Experience

The Artifact Box Exchange Network is a biannual interschool project that involves students in the develoment of advanced research, reference, and reasoning skills through the use of a hands-on simulation activity. Borrowing content from the disciplines of archaelogy, geography and science, the Network serves as a vehicle that allows students to collect, tag, reference, and exchange a set of artifacts that are representative of their locale.

Using a checklist of twenty-four locally available objects, each participating class is responsible for conducting an academic scavenger hunt to locate such items as a picture of a local landmark, a sample of a food product that is grown or produced in their region, a set of seasonal weather reports from the town newspaper, or a two-inch portion of an area roadmap. This collection of artifacts, complete with accompanying suggestions for finding appropriate references that might be used to identify their region, state or province, or city, is then assembled and packaged as an "Artifact Box". The box is exchanged with a "myster" partner classroom in a distant locale, the identity of which is known only to each classroom's teacher. Without revealing the location from which these artifacts were collected, the receiving teacher displays the box's contents to student researcher in the partner school. These students are then assigned the task of finding and using available reference books and nonprint resources to identify the country, state or province, and town from which these artifacts were gathered. It has proven to be a unique and motivating activity that affords students a first hand experience with basic geography, science and research concepts.

Purpose

The Artifact Box Exchange Network was designed as a simulation activity that allows students to transfer learned research and reference skills to applied science and social studies content. The goals of the project include the following:

Student Objectives

Participating students will:

- develop creative and critical thinking skills.

- compare their culture with communities in distant locations.

- become motivated to skillfully utilize advanced reference and non print resources.

- gain knowledge of the content and processes utilized by geographers, archaeologists, and anthropologists.

- improve their attitude toward social studies and science instruction.

- locate and interview human resources for finding information.

- appreciate the importance of cooperation in groups activities.

- appreciate the need to plan and organize one's work.

Teacher Objectives

As a result of participation in this activity, teachers will have the opportunity to:

- provide their students with a meaningful activity that will allow them to transfer and apply learned research and reference skills.

- supplement textbook instruction in social studies and science with a hands-on activity.

- involve community resources with a classroom based enrichment project.

- facilitate student involvement in a motivating and enjoyable educational project.

These lists of objectives are by no means comprehensive. Innovative teachers from all over North America have devised teaching techniques and extension activities that can greatly enhance the program's stated intentions. Activities such as conducting a school-wide contest for solving the contents of an Artifact Box, grade two youngsters teaching grade eight students how to complete a box, and a class of students visiting their partner school in Pennsylvania are but a few of the creative extensions implemented by teachers. It is the Network's hope that you will also create exciting learning opportunities that will extend the objectives of the program. We would be most interested in hearing of your experiences so that we may share them with others.

Brief Description

The Artifact Box is a hands-on simulation of a scavenger hunt with students using content from archaeology, geography, and science to collect artifacts which represent their locale. On completion, the Artifact Box is exchanged with those from other locations around the country. These regional artifacts, presented as clues in the "mystery" box, are decoded by student research and reasoning.

Objectives

1. To stimulate the development of advanced research, reference, and reasoning skills for varied academic levels.

2. To provide motivation for creative products

3. To improve attitudes and behaviors in non-traditional gifted students in academic areas.

Materials

The Artifact Box Exchange Network Teacher Guide Scott Johnson, Director. The Artifact Box Exchange Network, P.O. Box 9402 Bolton, CT 06043
For Information (203) 643-0090

Procedures

Teacher's Guide

Evaluation

1. Video Portfolio: Product descriptions by each student on individual student videotapes, describing each clue and product that were produced individually or as a group project.

2. Teacher Observation: Observations of students recorded in a LOG from both the student videos (Video Portfolio) and from classroom observation.
Observations will include the following:

a. number and description of products.
b. attitude description (specify changes).

c. behavior description (specify changes, i.e., doing in-depth research, collecting, reading extensively, writing letters, writing stories).

3. Student Tests: Paper and pencil assessment of student knowledge of research skills.

Resources and Skills for Students:

Soil Analysis: You might want to bring in someone from a greenhouse or garden center to work with students on how to analyze soil samples. Alo, check high school science teachers for teaching soil analysis.

Conducting Interviews: A reporter from the local newspaper could discuss with the class how to do interview.

Other Skills:

Graphing
Conducting Surveys
Using Reader's Guide
Mircrofilm - if available
Computer Data Bases
Scientific Names
Brainstorming Techniques

Suggestions for Creative Clues:

Art Work	Photography	Film Strips
Slides	Video	Word Searches
Computers	Crossword puzzles	Collages
Overheads	Pamphlets/brochures	Games

Ideas and Suggestions

1. Don't give answers while students are creating and solving the artifacts box. Let them analyze and evaluate for themselves.

2. Divide clues up into three smaller boxes. One marked regional, one state, and one local.

3. Decorate your artifact boxes. Make them look mysterious!

4. You may send more than one item for each clue. Example, sending 3 or more non edible plants from region so finder can see where they overlap.

5. Encourage kids to create their own original objects when possible, or send real items.

6. Use zip lock bags to place items in. Staple clue cards on outside of bag.

7. You might define region as any state that boarders on your state or pick a circle so many miles in a circle around your community.

8. You might include a DO NOT OPEN until mystery is solved and include students letters for pen pals, word searches, crossword puzzles, pamphlets about your community, etc.

9. Do not just blacken out names with a marker. Kids <u>will</u> read through them. Cut out anything you don't want them to see. Don't forget to check the back of clues. Have kids go over everything with a fine tooth comb.

10. Supply reference books which will include maps where artifacts could be located.

II. Students should have references to prove their artifact is from where they say it is.

12. When the box arrives, and <u>before</u> you let students begin to solve the clues, go through the box for very obvious clues and edit or change the order.

COMPUTER BULLETIN BOARD

AND

ELECTRONIC CURRICULUM

Computer Bulletin Boards and Electronic Curriculum

Purpose

Project SPRING used a computer bulletin board and electronic curriculum prototype that was developed for the Rural Information Network for the Gifted (RING) by Spicker and Southern, 1987. RING was designed to help rural districts provide opportunities for gifted students to interact with students like themselves, to provide access to the information and people resources of a major university, and to make the students themselves an information resource for other participants. Both RING and Project SPRING linked rural districts in an electronic bulletin board that was designed to augment personal and professional resources for gifted students and their teachers.

The Network

The major mechanism of the exchange used by the project was a computer bulletin board. Three levels of access were provided for participants. Messages could be sent confidentially to any other user on the system; they could be directed to any member of another group; or they could be presented to any bulletin board participant. Access to any of the levels was provided to students, teachers, university faculty, and project staff.

Students were asked to collaborate with other students on tasks that required common data from the various sites. In addition resources also were dedicated to allowing students to use the computer to communicate with one another on topics unrelated to their project. In addition, to the comuputer network, face-to-face meetings were also held during the school year, and again in the summer at Indiana University's College for Gifted and Talented Youth.

The Water Unit

A component of the water unit was specifically developed to include the use of the electronic bulletin board so as to encourage students to form alliances within and across districts. For example, each school within the three districts sent data concerning water usage in their particular communities, or sent data relating the oxygen level in their individual river or body of water for later analysis and comparison.

In addition, the electronic bulletin board permitted students to contact state agencies directly with queries regarding the water unit. For example, one child using the electronic bulletin board, accessed the Indiana Department of State Fisheries to inquire about the correct procedure for setting up an aquarium. This information was then disseminated to other classrooms

Suggestions

The concept of studying an umbrella unit across sites was a viable procedure for coordinating the disparate interests and abilities of gifted students in a common effort. It must be noted however, that certain requirements should be met in order to maintain the viability of the unit approach.

1. The unit must include elements that allow students with different interests and abilities to participate. The water unit was conceived to do this.

2. A mechanism for interaction must be built into the unit plan. Students do not correspond about their projects without specific reasons for doing so.

It is also clear that the electronic linkage is only a tool for addressing the problems of the rural gifted. In and of itself, it is insufficient to carry the weight of the project. A teacher of the gifted must provide adequate access to the linkage, maintain a consistency in rationale for its academic use, and provide balanced demands for the process of inquiry and project outcomes.

INTERDISCIPLINARY UNITS

RATIONALE FOR THE USE OF INTERDISCIPLINARY INSTRUCTIONAL UNITS

Rural communities have limited fiscal and human resources available to conduct an in depth study of a complex problem. One approach to overcoming those limitations is for several rural districts to plan a unit of study on a common topic, and then share instructional personnel, lesson plans, and community resources. The topic selected for study should consider the interests and experiences of rural children and the human and physical resources that are readily available within the community. One such instructional unit developed specifically for Project SPRING children was devoted to the study of water.*

The water unit is presented herein to illustrate the manner in which such units can be effectively used in rural environments.

"Last year, I had two kids who spent all their time at the creek. They were not good at book learning, but when they went out with the class to the creek, they did shine and they were the leaders who knew what to do." Kathy Stroud, 5th grade Teacher, Paoli

GOALS FOR THE WATER UNIT

A. To have students understand that all sciences are specific unto themselves, but interrelated.

B. To have students learn the scientific method as a means for identifying and solving problems.

*The water unit was developed by Martha Nice, Gifted and Talented Coordinator, Paoli Community School Corporation, with assistance from Walda Tower and Gayle Florence

ELEMENTS OF THE WATER UNIT

This curriculum is designed to be used in a variety of methods. It can be used as an enrichment model with activities selected to supplement existing units and textbooks, or it could be the basis for a full-time science curriculum. Nine units of study were developed. The Introduction to the water unit develops in students a general awareness of the water cycle and the scientific process. Seven "specialist" units with activities for classroom settings and for field study. The final unit is a conclusion that allows students to synthesize and evaluate data that has been acquired throughout the year.

Because of the longitudinal nature of the study and the importance of the concept of cycles, it is designed to be implemented throughout the school year. However, it would be very easy to select a given unit or a variety of activities selected from each unit.

There is also much flexibility in where the curriculum can be implemented. All students can do some of the activities. Some could extend their interests through field study or additional research. Time can also be scheduled for small groups to work in a resource room or outdoor lab setting with experts and support staff.

Classroom aquariums can take on the duties of mini labs with students recording data on a daily basis. Each unit (with the exception of the introduction and conclusion) has two parts; classroom and field study. The classroom folders have activities to provide a general background knowledge base and depending on the independence of the students participating, could be implemented with teacher guidance or by small group discovery. It is not necessary to do all of the activities. They should be chosen according to need and student learning styles.

Field study folders concentrate on process skills and open-ended laboratory experiences. They should be implemented by an experienced teacher or field expert.

Science seminars can also be organized for further discussion, analysis of a specific experience or issue. These can take place in a resource room or in a corner of the classroom. Students should have a representative sample of all scientists or partial group to offer their perspective to an issue or problem. At times, all students role-playing one scientific area should be grouped together to compare data and share knowledge. Forcing communication is important as students become aware that data or knowledge in one field might also be relevant to their study. As the units progress students become more adept at organizing themselves into groups according to need, rather than being categorized by an adult.

INTRODUCTION TO WATER QUALITY CURRICULUM

GETTING READY

Water Information Reference Table - collect books and pamphlets from the library and other sources about Water Chemistry, Ichthyology, Entomology, Biology, History, Earth Science and other pertinent water related information.

Current Affairs - Encourage students to constantly search for "water" information. Set up a bulletin board especially for newspaper and magazine articles that the students find.

Word Bank -"water" vocabulary words can be displayed on the wall as you use them.

Set up a Working Fresh Water Aquarium - Explain what is needed for a successful fresh water aquarium.

Pass out folders for students to decorate and to keep records about their rivers.

HOISTING ANCHOR, SETTING THE COURSE AND TRIMMING THE SAIL

As a class, or as individuals, brainstorm all the thought that come to the students which pertain to water. This may be recorded on a chalkboard or chart paper. This will show you what they are most interested in and will also indicate water knowledge. This may be used as a pre-test.

Introduce the Water Cycle
Water: Where it Comes From, Where it Goes.

Develop a survey (for students to take home and share with parents) which identifies the most common uses of water in the home.

Have students find where they live on a county map and pin their initials on the location. They need to locate which river, creek or stream to which they are closest.

FIRST FIELD TRIP TO CHOSEN CREEK OR RIVER

Visit your chosen stream for observation purposes.

1. What's in and around My River?
2. "The Observations of an Amphibian"

Collect fish, amphibians, insects, rocks, and plants for your fresh water aquarium.

IDENTIFYING SPECIALISTS FOR YOUR WATER QUALITY PROGRAM

Define and discuss the following areas of specialization with the students.

Entomology (bugs)

Geology (rocks)

Ichthyology (fish)

Conservation (laws, abuse)

Zoology (animals near water)

Botany (plants)

History (people)

Ground Water Chemistry (water content, minerals, etc.)

Surface Water Chemistry (water content, bacteria, etc.)

Microbiology (tiny animals in water)

Agronomy (soil)

Discuss what a person that works in the above field does and tell how that scientist would relate to the field of water quality.

Have students sign up to study one area in depth (remind them it is important to look at the total environment, so the class must have representatives in all areas).

Once they have identified which area they want to study, introduce each group to the Specialists Packets for their chosen area.

Each group will report information back to the class that they have learned. This will give the class a full picture of the water quality of their stream.

EXPLORATION OF WATER

1. General Awareness

2. Areas to be studied: Adopt a lake or river

3. Field trip: Observations, collections - classroom aquariums

4. Questions provide study areas/topics

5. Vocabulary

6. Scientists-Students

7. Resources

    a. People
    b. Teaching Materials List Overview (resources section)

        1) Audio Visual
        2) People
        3) Field Trips
        4) Books
        5) Articles
        6) Kits
        7) Text
        8) Units
        9) Simulations
        10) Computer Materials

8. Schedules

9. Questions, activities, worksheets (last section tagged Resources)

RESOURCES

Entomology:

State Board of Health

Ground Water/Surface Water:

Department of Environmental Management
Water Treatment Plants

Ichthyology and Botany:

Biological Studies Section
Water Quality Surveillance and Standards Branch
Office of Water Management Branch
State Fish Hatchery
Department of Natural Resources

Geology and History:

Geological Survey
Local Farmers and Citizens
Local Businesses

Agronomy:

Soil Conservation Service
Local Extension Office

Conservation and Zoology:

County Conservation Officer
Certified Scuba Diver
Department of Natural Resources
Local Extension Office

State Park Services
Local Businesses

PROCESS

Locating Resources
Contacting Resource People
Developing Interview Skills
Operating Video and Audio Equipment
Operating Microscope, Making Slides

Developing:
Map Reading Skills (political, geological survey, soil survey, etc.)
Taxonomy Skills (classification)
Graph, Survey Interpretation Skills
Methods of Collecting Raw Data: (electrofishing, seining, D netting, soil testing procedures, chemical testing, plaster casting)

"She was always asking to do more, always volunteering to do more, and to work on the computer logs, to document changes with the tadpoles' changing into frogs and the snails laying eggs." Janice Apple, 5th grade Teacher, Paoli

PRODUCTS

County Map (pin location of home, identify water source)
Classroom Aquarium (LOG to observe, describe graph changes)
Survey (family water usage)
Mural (observations: made with water colors using water source being studied)
Water Quality Chart (with data, conclusions)
Videos (as resources)
Video Documentary (oral history)
Adaptations

ICHTHYOLOGY SPECIALISTS
Classroom Activities

Objective - Ideas to be Understood

Students will be able to identify the major species of fish that live in their area.

Supporting Activities:

1. Each student will make a list of as many different kinds of fish as possible that live in their stream.

2. Make a "biography" of each fish

   a. Name - common and scientific
   b. Where it lives
   c. Habitat
   d. What the fish needs for survival
   e. Other interesting information

3. Make a drawing of the fish (painting or sketch) and an illustration of its habitat large enough to be easily seen in a wall display.

4. Make a three dimensional replica of some of the fish. Hang the models from the classroom ceiling.

Evaluation:

1. Name five species of fish that live in your stream and describe their habitats.

2. List and describe a variety of reasons that fish are important.

ICHTHYOLOGY FIELD STUDY

Objective - Ideas to be Understood

Students will understand the relationship between fish species diversity and overall water quality.

Supporting Activities Field Study:

1. Introduction to fish collecting

   a. seine

2. On site data collection

   a. location of fish

   b. length of fish

   c. weight of fish

   d. date each species found

   e. number of each species found

3. Biologists from the Department of Environmental Management will assist with fish collection data.

Materials:

Seine, boots, scale, ruler, buckets

Evaluation:

1. Students will be able to identify the different species of fish found, and their role as indicators of stream quality.

EARTH SCIENCE SPECIALISTS
Rocks and Soils

Classroom Activities

Objectives: Ideas to be Understood

1. Students will be able to identify the different kinds of rocks, fossils and soils along their streams.

2. Students will understand how erosion affects stream quality.

Supporting Activities:

1. The students will define the following kinds of rocks and show examples of each rock.

   a. Sedimentary
   b. Igneous
   c. Metamorphic

2. The students will be able to identify the following fossils and give examples of each type of fossil.

   a. Chrinoids
   b. Blastoids
   c. Bryozoans
   d. Anthozoa

3. The student Earth Scientists will complete the activities enclosed in the packed "Earth Scientists Classroom Activities".

   a. Soil Formation - Making Soil
   b. Soil Conservation - Contouring
   c. Soil Conservation - Soil Texture
   d. Soil Conservation - Soil Compaction and Permeability

Evaluation:

1. Identify the different kinds of rocks and fossils and give examples of each.

2. Students will be able to show the different kinds of soil and it structure.

3. Students will draw a picture of contour farming and explain how it reduces erosion.

EARTH SCIENTISTS FIELD STUDY
Rocks and Soils

Objectives: Ideas to be Understood

1. Students will make a rock and fossil collection of the various kinds of rocks found along "their" stream.

2. Students will be able to recognize stream erosion and show how to control it.

Supporting Activities to Field Study

1. Brief introduction to rock and fossil collecting.

2. Introduction to mapping stream.

3. On-site rock and fossil collecting.

   a. Location of where rock or fossil was found

   b. Name of rock or fossil

   c. Date collected

4. Draw a picture or take pictures of your stream and label the factors which control or help increase erosion.

5. A Geologist from the Indiana Geological Survey will assist in identifying specific rocks found along the stream, and explain the geological events that caused their formation.

6. Soil Scientists from Soil Conservation Service will help in locating erosion control methods used along the stream and tell why they are important.

Materials:

Hammer, chisel, knife, acid (HCL), hand lens, collecting bag, notebook, pencil

Evaluation:

1. Students will present the erosion control map they made to the class, and explain the various techniques they observed.

2. Students will identify and display their rock and fossil collections

WHY PROVIDE FIELD EXPERIENCE?

The following are important reasons for utilizing and exploring your local environment to extend and enhance the environmental project that you do in your classroom.

1. To awaken curiosity in preparation for a new area or unit of study. (The teacher, of course, must expect to do something with this newly aroused curiosity upon returning to the classroom.

2. To stimulate additional interest in a given area or unit of study. (Students now will have some background in the area under study and can ask more penetrating questions.)

3. To culminate an area or unit of study. (Specific learning on the trip may clarify vague or unclear ideas as well as rekindle interest in further study.)

4. To provide field investigations away from the classroom to collect specimens to bring back for additional study.

5. To provide field investigations for observing and recording data, collected both descriptively and quantitatively in the field.

6. To gain an aesthetic appreciation of our natural or cultural environment by studying the site where the phenomena occurred.

7. To better understand and interpret the world about us. (Small facts or bits and pieces become integral parts of the total picture as one's horizon is raised.)

8. To provide students with a chance to be involved with planning their own learning experiences in the project.

9. To allow students to explore areas and be involved with situations that they have not previously been exposed to.

TEACHER PREPARATION FOR FIELD EXPERIENCE

Nothing can turn a great deal into a disaster faster than a lack of planning. Consider any of the following tips as you begin to consider doing a site exploration or field trip. Tips for planning range from the usual safety precautions through parental permission and student involvement in the planning.

1. Try a "dry-run" or personal visit prior to the actual trip with the class. (Some problems will become obvious. Some things to see and do as well as to avoid may appear.)

2. Meet the host or guide and discuss the purpose of the visit, age of the students, kinds of questions that they are likely to ask, how long s/he is to talk and what material s/he is to cover.

3. Check the material needs for the trip such as special equipment, clothing for the students, food and drink and any expense money needed. (Rest or comfort stops are needed for long trips)

4. Plan activities for the students for the time of travel both to and from the place of the field experience. (This may include observations, recording information and time logs.)

5. Secure approval for the trip from the proper school authorities, the owner of the site to be visited, as well as the parents of the students involved. (Have each of the parties involved been informed about the purposes of the trip; where, when, and how you will travel; what costs will be encountered and how will expenses be handled?)

6. Plan adequate supervision of the students at all times. (The school principal or other school personnel might be invited. Parents and other interested persons may be able to accompany the groups. A ratio of one adult per eight students is often recommended. Provide each chaperon a list of the students for whom s/he will be responsible. A briefing session prior to the trip helps to establish guidelines as to what is expected of the chaperons and students.)

7. Prepare for follow-up and evaluation of the field experience. (It will be evident that many purposes other than those specifically planned for were also fulfilled. The experiences shared by the teacher, students and the chaperons can be among the most important and lasting of the entire trip.)

PREPARING STUDENTS FOR THE FIELD EXPERIENCE

Students are keenly interested in trips away from the school and they are highly motivating. Carry-over may be great if measured by the enthusiasm of the students, but careful planning between students and teacher is necessary for the maximum benefit. Prepare your students well.

1. Help the students understand the reasons for the trip. (Students need to have some basic concepts relevant to the problems at hand. They need to have some general background knowledge to help better understand how this out-of-school experience related to their total school program.

2. Much of the value of the field work lies in carefully preparing the students to observe carefully, make accurate recordings and make critical reviews and appraisals. (Prior practice along these lines is needed for one cannot teach students how to accomplish these things in a few minutes.)

3. Students need a purpose for learning. Research indicates that the ability to attain and keep a specific concept depends, to a large measure, in the meeting of the same concept in a variety of situations, upon relating facts to principles, and in using these concepts in different contexts. (Thus field experiences tend to transfer the inquiry skills of school into an out-of-doors situation.)

4. The experience must be such that the children feel that it was interesting and worthwhile, not just another lesson or group of facts.

5. Involve each student. Every member of the class should have a specific responsibility and a job to do. (Some can be recorders, others observers, guides, feelers. smellers, etc.)

6. Set up standards of behavior or conduct with the class. (If all phases of the trip are discussed, the students will better understand what is expected of them and realize why certain rules must be followed. Students can list many cautions to be observed when visiting a known site.)

7. Use a buddy system or a small group team approach to help keep track of the students. Sometimes you will find that students work better in small groups anyway.

8. Allow enough time for the observations and data recording, but keep the pace lively and varied.

AFTER THE FIELD EXPERIENCE: EVALUATION AND FOLLOW-UP

The follow up of the field experience may be its most important phase. When the leader shows no interest in what the students did or fails to encourage them to express their thought, s/he indirectly tells them that the entire thing is of no consequence. Evaluating the experience (through the eyes of the learners) may help to determine if the specific visitation or experience should be undertaken at another time or with another group.

1. Build upon the field experiences and encourage the learners to seek answers to problems encountered. Begin immediately to follow-up.

2. Parents want to know about the experience. (Written exercises describing events and activities help to convey ideas to the parents and to others.)

3. Recognize that the social experience of being with persons other than one's family and the actual ride on the bus may be enjoyable aspects of the trip. Don't overlook the possible discussions about group dynamics.

4. Relate personal observations and investigations to the classroom activities individually through reports, projects, demonstrations or displays, and through group presentations. (A list of things learned by the students is not enough. The ideas must be tied to the on-going classroom program.)

5. Ideas or questions that were raised or unanswered help determine if additional excursions or study are needed. (Data gathered should be investigated and analyzed and then hypotheses made in terms of the problems under study.)

6. A written evaluation should be made and filed for future reference. This evaluation could be a joint venture between students, teachers, or leaders, and other chaperons. (It may help others at a later date in planning another trip. This evaluation should include suggestions for changes or items for additional emphasis.)

7. Factual information as to routes, sites used, person to contact, etc., should be made a part of the permanent record. (After a few varied trip have been recorded the school has the beginnings of a Resource Guide to Field Studies.)

8. Involve the students in sending thank-you notes to people who helped provide, plan or pay for the field experience.

HANDOUTS AND OVERHEADS

Overhead/Handout #1 Bloom's Taxonomy

Major Categories in the Cognitive Domain of the Taxonomy of Educational Objectives (Bloom, 1956)

Knowledge

Knowledge is defined as the remembering of learned material. This may involve the recall of a wide range of materials, from specific facts to complete theories, but all that is required is the bringing to mind the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.

Comprehension

Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by intepreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.

Application

Application refers to the ability to use learned materials in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.

Analysis

Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.

Synthesis

Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal) or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

Evaluation

Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgements are to be based on definite criteria (relevant to the purpose), and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgements based on clearly defined criteria.

Illustrative Behavioral Terms
for Stating Specific Learned Outcomes

Knowledge:

Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states.

Comprehension:

Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes.

Application:

Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses.

Analysis:

Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides.

Synthesis:

Categorizes, combines, compiles, composes, creates, devises, assigns, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes.

Evaluation:

Appraises, compares, concludes, contrasts, criticizes, describes, discriminates, explains, justifies, interprets, relates, summarizes, supports.

Activity: Working in groups of 4 or 5, select a chapter from an appropriate grade level textbook (or other book), and apply Bloom's Taxonomy.

Overhead/Handout #2

The Taba Teaching Strategies Program

The Taba strategy involves methods by which a teacher leads students through sequential intellectual tasks by asking open-ended questions.

I. Concept Development

- A. Listing: differentiating relevant from irrelevant
- B. Grouping: noticing common attributes
- C. Labeling: finding word or phrase expressing commonality or relationship
    1. Abstracting
    2. Synthesizing
- D. Subsuming: seeing hierarchies in relationships
- E. Recycling: looking at data in fresh ways

II. Interpretation of Data

- A. Discovery and inquiry technique
- B. Gathering information and making inferences about it
    1. Listing: deciding what is relevant and what is not
    2. Inferring causes and effects
    3. Inferring prior causes and subsequent effects
    4. Reaching conclusions
    5. Generalizing

III. Application of Generalizations (Applying previous generalizations and facts to other situations)

- A. Predictions
    1. Brainstorm possible results of some hypothetical situation
    2. Explain reasons for making predictions
- B. Inferring conditions: building logical justifiable chain of relationships

C. Inferring consequences and conditions

D. Conclusions: considering predictions, conditions and reasons and making judgements as to which conditions will likely prevail

E. Examining a generalization

IV. Resolution of Conflict (also called interpretation of feelings, attitudes and values)

A. Listing: knowing what actually happened

B. Inferring reasons and feelings: examining possible motivations and feelings of people in conflict

C. Generating alternatives and examining their consequences

1. Consideration of all factors
2. Consideration of all consequences of each alternative
3. Course of action

D. Evaluation: deciding most appropriate action

E. through H.:Continue from A again dealing with their own lives or peers' lives

I. Generalizing: forming abstract statement about how people usually handle such situations

V. Miscellaneous

A. The teacher should avoid negative acts

1. Giving opinions, judgements about ideas
2. Rejecting, ignoring, cutting off a response
3. Doing tasks students should do
4. Editing, changing a student's idea

B. Four types of questions

1. Questions calling for variety
2. Questions calling for clarification or extension
3. Questions calling for reasons or support for ideas

4. Focusing Questions for grouping, examining causes and prior causes,and examining effects and subsequent effects.

C. Planning is important

1. Sample generalization for all strategies except concept development
2. Prediscussion procedures
3. Behavioral objectives
4. Focusing questions for each step
5. Support procedures for each step
6. Cognitive map of possible student responses to focusing questions at each step

D. General types of tasks

1. Getting data
2. Organizing data
3. Making inferences
4. Generating alternatives
5. Making conclusions
6. Making generalizations

Overhead/Handout #3

Renzulli's Enrichment Triad Model

Type I Enrichment

Type I Enrichment consists of experiences and activities that are designed to bring the learner in touch with the kinds of topics or areas of study in which he or she may develop a sincere interest. Through involvement in Type I experiences, students will be in a better position to decide if they would like to do further research on a particular problem or area of interest.

Type II Enrichment

Type II Enrichment consists of materials, methods and instructional techniques that are concerned with the development of higher-level thinking and feeling processes. These processes include critical thinking, problem solving, inquiry training, divergent thinking, awareness development and creative or productive thinking. Type II activities are open-ended and allow students to escalate their thinking processes to the highest levels possible. Type II activities are also designed to introduce students to more advanced kinds of studies.

Type III Enrichment

Type III Enrichment consists of activities in which the student becomes an actual investigator of a real problem or topic by using appropriate methods of inquiry. The success of a Type III activity depends on the interest and task commitment of the individual student. Examples of intensive, long-range Type III activities include: the creation of a walking robot, the production of a dramatic marionette show which outlines the development of clowns from the thirteenth century to the present: a continuation of Tolkien's Lord of the Rings in the form of a novel; the writing and illustration of a Children's Christmas Book; etc.

Activity: How would you utilize Renzulli's Enrichment Triad Model? Work together with 2 or 3 other people, and develop a plan for presentation to the rest of the group.

Overhead/Handout #4 Gardner's Multiples Intelligences

Theory of Multiple Intelligences (MI)

Linguistic

Learn best by seeing, saying hearing language
Often think in words
Enjoy reading, writing, storytelling
These children need "tools" for word-making

Logical-Mathematical

Learn by forming concepts, looking for patterns, relationships
Need to actively manipulate objects, experiment with things
Constantly question and wonder about natural events
These children need lots of time to explore new ideas

Musical

Learn concepts by putting information to music
Learn while singing, humming, whistling and moving to rhythm
Sensitive to nonverbal sounds in the environment
Learn best when information is sung, tapped out, whistled

Visual-Spatial

Learn by thinking in images
Learn visually and need to be taught through images, pictures, color
Motivated through audio/visual materials
Highly developed spatial awareness
Learn concepts through art

Bodily-Kinesthetic

Knowledge is processed through whole body sensations
Decisions many times based on "gut feelings"
Excellent large and fine motor skills
Communicate through body language
Internalize information by touching, manipulating, moving, acting out
Learn through role-play, drama, creative movement

Intrapersonal

Learn best when left by themselves
Self-motivating
Need opportunities for independent study, self-paced activities, individualized projects and games
Need private space and time
Have deep awareness of their inner feelings, dreams, ideas
Intuitive, wise and even psychic
Learn through own inner speech and imagery

Interpersonal

Frequently the leader in the classroom
Great organizer and communicator
Enjoy activities where problem solving skills are used
Learn best by relating, cooperating, and dynamic interactions with others

Activity: Using one of Aesop's Fables incorporate Gardner's Multiple Intelligences into the curriculum.

The MI theory recognizes the diversity of ways students can succeed in school, the diversity of students and students' wide range of abilities used in learning, problem solving, and fashioning products that are valued in a diversity of cultural settings.